



## Milroy disease

Milroy disease is a condition that affects the normal function of the lymphatic system. The lymphatic system produces and transports fluids and immune cells throughout the body. Impaired transport with accumulation of lymph fluid can cause swelling (lymphedema). Individuals with Milroy disease typically have lymphedema in their lower legs and feet at birth or develop it in infancy. The lymphedema typically occurs on both sides of the body and may worsen over time.

Milroy disease is associated with other features in addition to lymphedema. Males with Milroy disease are sometimes born with an accumulation of fluid in the scrotum (hydrocele). Males and females may have upslanting toenails, deep creases in the toes, wart-like growths (papillomas), and prominent leg veins. Some individuals develop non-contagious skin infections called cellulitis that can damage the thin tubes that carry lymph fluid (lymphatic vessels). Episodes of cellulitis can cause further swelling in the lower limbs.

### Frequency

Milroy disease is a rare disorder; its incidence is unknown.

### Genetic Changes

Mutations in the *FLT4* gene cause some cases of Milroy disease. The *FLT4* gene provides instructions for producing a protein called vascular endothelial growth factor receptor 3 (VEGFR-3), which regulates the development and maintenance of the lymphatic system. Mutations in the *FLT4* gene interfere with the growth, movement, and survival of cells that line the lymphatic vessels (lymphatic endothelial cells). These mutations lead to the development of small or absent lymphatic vessels. If lymph fluid is not properly transported, it builds up in the body's tissues and causes lymphedema. It is not known how mutations in the *FLT4* gene lead to the other features of this disorder.

Many individuals with Milroy disease do not have a mutation in the *FLT4* gene. In these individuals, the cause of the disorder is unknown.

### Inheritance Pattern

Milroy disease is inherited in an autosomal dominant pattern, which means one copy of the altered gene in each cell is sufficient to cause the disorder. In many cases, an affected person inherits the mutation from one affected parent. Other cases may result from new mutations in the *FLT4* gene. These cases occur in people with no history of the disorder in their family. About 10 percent to 15 percent of people with a mutation in the *FLT4* gene do not develop the features of Milroy disease.

## Other Names for This Condition

- congenital familial lymphedema
- hereditary lymphedema type I
- Milroy's disease
- Nonne-Milroy lymphedema

## Diagnosis & Management

### Genetic Testing

- Genetic Testing Registry: Hereditary lymphedema type I  
<https://www.ncbi.nlm.nih.gov/gtr/conditions/C1704423/>

### Other Diagnosis and Management Resources

- GeneReview: Milroy Disease  
<https://www.ncbi.nlm.nih.gov/books/NBK1239>
- MedlinePlus Encyclopedia: Lymphatic Obstruction  
<https://medlineplus.gov/ency/article/001117.htm>

### General Information from MedlinePlus

- Diagnostic Tests  
<https://medlineplus.gov/diagnostictests.html>
- Drug Therapy  
<https://medlineplus.gov/drugtherapy.html>
- Genetic Counseling  
<https://medlineplus.gov/geneticcounseling.html>
- Palliative Care  
<https://medlineplus.gov/palliativecare.html>
- Surgery and Rehabilitation  
<https://medlineplus.gov/surgeryandrehabilitation.html>

## Additional Information & Resources

### MedlinePlus

- Encyclopedia: Lymphatic Obstruction  
<https://medlineplus.gov/ency/article/001117.htm>
- Health Topic: Lymphatic Diseases  
<https://medlineplus.gov/lymphaticdiseases.html>

### Genetic and Rare Diseases Information Center

- Milroy disease  
<https://rarediseases.info.nih.gov/diseases/7220/milroy-disease>

### Educational Resources

- Boston Children's Hospital: Lymphedema  
<http://www.childrenshospital.org/conditions-and-treatments/conditions//lymphedema>
- Cincinnati Children's Hospital: Lymphedema  
<https://www.cincinnatichildrens.org/health//lymphedema>
- Cleveland Clinic: Lymphedema  
<http://my.clevelandclinic.org/health/articles/lymphedema>
- Disease InfoSearch: Nonne-Milroy disease  
<http://www.diseaseinfosearch.org/Nonne-Milroy+disease/5256>
- Merck Manual Home Edition for Patients and Caregivers: Lymphedema  
<http://www.merckmanuals.com/home/heart-and-blood-vessel-disorders/lymphatic-disorders/lymphedema>
- Orphanet: Congenital primary lymphedema  
[http://www.orpha.net/consor/cgi-bin/OC\\_Exp.php?Lng=EN&Expert=2416](http://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=2416)

### Patient Support and Advocacy Resources

- Lymphatic Research Foundation  
<http://lymphaticnetwork.org/>
- Lymphoedema Support Network  
<http://www.lymphoedema.org/>
- National Lymphedema Network  
<http://www.lymphnet.org/>
- National Organization for Rare Disorders (NORD)  
<https://rarediseases.org/rare-diseases/hereditary-lymphedema/>

### GeneReviews

- Milroy Disease  
<https://www.ncbi.nlm.nih.gov/books/NBK1239>

### ClinicalTrials.gov

- ClinicalTrials.gov  
<https://clinicaltrials.gov/ct2/results?cond=%22Milroy+disease%22>

## Scientific Articles on PubMed

- PubMed  
<https://www.ncbi.nlm.nih.gov/pubmed?term=%28Lymphedema%5BMAJR%5D%29+AND+%28%28milroy+disease%5BTIAB%5D%29+OR+%28hereditary+lymphedema+type+i%5BTIAB%5D%29+OR+%28milroy's+disease%5BTIAB%5D%29+OR+%28nonne-milroy+lymphedema%5BTIAB%5D%29+OR+%28primary+congenital+lymphedema%5BTIAB%5D%29%29+NOT+%28elephantiasis%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D>

## OMIM

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## **Sources for This Summary**

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